
Call-Back Queuing

Call-Back Queuing (CBQ) is a Node feature that provides queuing for network calls that encounter busy or blocked facilities at the Node. CBQ enables the calling party to go on-hook after activation of the Ring Again (RGA) feature [see *X11 features and services* (553-3001-305)] and receive a call-back from a Node when a network facility becomes available.

The CBQ feature is available only to stations located at a Node. Unlike OHQ, CBQ is offered only at the originating Node. Access to CBQ is accomplished through the existing RGA feature.

Call-Back Queuing options

Two options for CBQ eligibility are defined by the call originator's Network Class of Service (NCOS). The first option, CBQ(i), means that the CBQ may be offered after only the initial route set of a route list has been examined for an available route. The second option, CBQ(a), means that CBQ may be offered after both the initial and extended (in other words, all) route sets of a route list have been examined. In either case, a call that is offered CBQ is queued initially against only the initial route set.

Call-Back Queuing eligibility

Before offering CBQ to a call originator, the following eligibility tests are performed:

- At least one of the routes in the initial route set is defined as CBQ eligible.
- The user's NCOS is defined as permitting CBQ—either CBQ(i) or CBQ(a).
- The call is not eligible for OHQ. Calls that are eligible for both OHQ and CBQ will be offered OHQ.
- The user's telephone is allowed access to the Ring Again (RGA) feature and does not have another CBQ or RGA call already in the queue.
- The CBQ feature is enabled for this customer.

CBQ(i) eligibility

For call originations by a caller defined as CBQ(i) eligible, the system searches the initial route set for an available route. If no available route is found, CBQ is offered to the caller, subject to the CBQ(a) eligibility tests.

CBQ(a) eligibility

For call originations by a caller defined as CBQ(a) eligible, the system examines the initial route set for an available route. If no available route is found, the extended route set is then searched for an available route. If an available route is not found in the extended set, then CBQ is offered, subject to the CBQ eligibility tests. However, if an available route in the extended route set is found that is designated as expensive, and the user's NCOS allows Expensive Route Warning Tone (ERWT), the tone is given and the system delays terminating the call. During this delay the user has the following options:

- Refusing the expensive route by abandoning the call.
- Waiting, and allowing the call to complete over the expensive route.
- Activating the RGA feature (by using the feature key or access code) to place the call in the CBQ. The user must be CBQ(a) eligible; otherwise, the operation of the RGA feature is ignored.

Call-Back Queuing offer

The CBQ offer consists of an optional recorded announcement followed by an overflow tone. If the station user wants to accept the CBQ offer, the RGA must be activated within 30 seconds. RGA activation follows present feature operation for SL-1 or digital and 500/2500 sets [see *X11 features and services* (553-3001-305)]. The station user can refuse the CBQ offer by going on-hook. If the station user neither accepts nor refuses the CBQ offer within 30 seconds, the call is force-disconnected.

CBQ calls are placed in a priority-ordered trunk queue (together with OHQ calls, if any) with a starting priority and maximum priority defined by the call originator's NCOS. At the same time, two timers are started—a queue promotion timer and a route advance timer—each with values defined through the originator's NCOS. At intervals defined by the queue promotion timer, the priority of the call is incremented until it reaches its maximum priority. Each time the call priority is incremented, its position in the CBQ is advanced. If the route advance timer reaches its maximum value before the call can be terminated on a route in the initial set, the extended set or route is added to the routes that the call is currently queued against.

Expensive Route Warning Tone (ERWT) is not given to calls that have been queued, even if terminated on expensive facilities. Unless canceled by the call originator, CBQ calls remain in the queue until they have been offered a trunk; there is no time limit on CBQ calls.

Call-Back Queuing callback

When a trunk becomes available for a CBQ call, it is seized to prevent incoming originations during the CBQ call-back period. The outpulsing of digits (either those originally dialed by the user or those required as a result of digit manipulation) is started at a slow, fixed rate. The number of digits that are outpulsed determines how long the trunk can be held while CBQ call-back is being offered to the originating station. The system computes this time by allowing 10 seconds before the first digit is outpulsed at 2.56 seconds between subsequent digits.

The originator of the call is alerted to the CBQ call-back either by the buzzing and winking tone of the RGA feature lamp (the SL-1 or a digital set) or by short bursts of ringing (the 500/2500 set). The set user must accept the call-back within the computed value of outpulse time or the service-changeable CBQ time limit of 10 to 30 seconds, whichever is less. A user with a 500/2500 set must accept the call-back within 6 seconds. Acceptance of the CBQ call-back is performed with present RGA operating procedures. (When a CBQ call-back is answered at a digit display set, the original dialed digits are displayed.) If the user does not answer the call-back within the time limit, the call is removed from the queue and discarded. If the user accepts the call-back within the time limit, the call is terminated. A CBQ call can be canceled by the originating station by means of the existing procedures for RGA cancellation.

Call-Back Queuing traffic measurements

Traffic measurement data related to the usage of the CBQ feature is accumulated at a Node or Main equipped with the Network Traffic (NTRF) feature. Data for CBQ usage is available in *Traffic measurement formats and output* (553-2001-450).

Routing measurements (TFN001)

Routing measurements (TFN001) are available at a Node or a Main. They reflect on a route-list basis the number of CBQ offers, the number of CBQ call-backs, the average time in the CBQ, and the number of CBQ cancellations.

Network Class of Service measurements (TFN002)

Network Class of Service measurements (TFN002) are available at a Node or a Main. They reflect on an NCOS-basis the number of CBQ calls and the average time in the CBQ.

Feature interactions

The CBQ feature interacts with the following features.

Barge-In, Force Disconnect

Between the time that a trunk is seized for a CBQ call and the user accepts the CBQ call-back, the trunk can be stolen by the attendant or force-disconnected through a service change. If this occurs, there is no guarantee that the call can be terminated when the user accepts the CBQ call-back. Under these circumstances, the call is treated like a new origination, and Network Alternate Route Selection/Basic Alternate Route Selection (NARS/BARS) is used to reattempt termination. This can result in the call being blocked and being offered CBQ a second time.

Hunting, Call Forward, multiple appearance DN

CBQ call-backs to stations at a Node are offered only to the originating station, regardless of the Hunting or Call Forward features that may be in effect. Other appearances of a station's Directory Number (DN) are not offered the call-back.

Attendant functions

Because the RGA feature is not supported at attendant consoles, CBQ is not offered to an attendant, regardless of the CBQ eligibility of the NCOS assigned to the attendant.